IN THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application.

1. (Previously Presented) A track search control circuit comprising:

an optical pickup for emitting and moving a light beam in the radial direction of an optical disc to write information signal into the optical disc or read the information signal therefrom;

a track traversing signal generation circuit configured to detect, when the light beam emitted from the optical pickup moves in the radial direction of the optical disc, the light beam having traversed a track of the optical disc, and generate a normal direction on-track signal in an on-track period when the light beam traverses a zone of the track in a track search direction defined by a system controller and a normal direction off-track signal in an off-track period when the light beam traverses a zone between the tracks;

a first time measurement circuit configured to start time measurement at a time when the on-track signal is generated by the track traversing signal generation circuit;

a second time measurement circuit configured to start time measurement at a time when the off-track signal is generated by the track traversing signal generation circuit;

a velocity error signal generation circuit configured to detect an error between a relative moving velocity of the light beam of the optical disc to the track and a target velocity based on a measurement outputted by the first time measurement circuit and a measurement outputted by the second time measurement circuit to generate an error signal; and

a correction circuit configured to correct the moving velocity of the light beam in the radial direction based on the error signal generated by the velocity error signal generation circuit.

2. (Previously Presented) A track search control circuit according to claim 1, wherein the on-track signal and the off-track signal are generated approximately at the time of zero-crossing of a tracking error signal indicating a relative positional displacement in the radial direction of the optical disc between the track and the light beam emitted from the optical pickup.

3. (Previously Presented) An optical disc drive comprising:

an optical pickup for emitting a light beam on a track of an optical disc, on which information is recorded, and receiving the reflected light from the track or the transmitted light therethrough while the optical disc is rotating, thereby extracting the information and converting the information to an electric signal;

a signal processing circuit configured to generate a tracking error signal that indicates a relative positional displacement in the radial direction of the optical disc between the track and the light beam emitted from the optical pickup and a ripple signal that indicates amplitude information, from the electrical signal output of the optical pickup at a time when the light beam emitted from the optical pickup moves in the radial direction of the optical disc;

tracking servo mechanism configured to control the light beam emitted from the optical pickup in response to the tracking error signal so that the light beam in the radial direction of the disc is positioned on the track;

a track traversing signal generation circuit configured to detect that the light beam emitted from the optical pickup has traversed the track based on the tracking error signal and the ripple signal, and generate a normal direction on-track signal in an on-track period when the light beam traverses a zone of the track and a normal direction off-track signal in an off-track period when the light beam traverses a zone between the tracks;

a first time measurement circuit configured to start time measurement at a time when the on-track signal is generated by the track traversing signal generation circuit;

a second time measurement circuit configured to start time measurement at a time when the off-track signal is generated by the track traversing signal generation circuit;

a velocity error signal generation circuit configured to detect an error between a moving velocity of the optical beam in the radial direction of the optical disc and a target velocity based on a measurement output of the first time measurement circuit and a measurement output of the second time measurement circuit to generate an error signal; and

a tracking velocity correction circuit configured to correct the moving velocity of the optical beam in the radial direction by applying the error signal output of the velocity error signal generation circuit to the tracking servo mechanism.

4. (Previously Presented) An optical disc drive according to claim 3, wherein the tracking velocity correction circuit starts to apply a signal indicative of an acceleration energy corresponding to the error signal to the tracking servo mechanism in a half-track period after when the velocity error signal generation circuit starts the error detection and a signal indicative of a deceleration energy corresponding to the error signal to the tracking servo mechanism when a succeeding half-track comes in the target velocity period after when ~~said~~ the velocity error signal generation circuit starts the error detection.

5. (Previously Presented) An optical disc drive according to claim 3, wherein the track traversing signal generation circuit generates the on-track signal and the off-track signal approximately at the time of zero-crossing of the tracking error signal.

6. (Previously Presented) An optical disc drive according to claim 3, wherein

the first time measurement circuit comprise a first counter which is cleared by the on-track signal, counts clock signals having a constant frequency higher than that of the on-track signal, and goes into a hold status after generating a first flag output indicating that the

moving velocity of the light beam after the generation of the on-track signal is lower than the target velocity;

the second time measurement circuit comprises a second counter which is cleared by the off-track signal, counts the clock signals, and goes into a hold status after having counted a specified number of clocks and subsequently generating a second flag output indicating that the moving velocity of the light beam after the generation of the off-track signal is lower than the target velocity; and

the velocity error signal generation circuit, based on the first flag output and the second flag output, generates an acceleration flag when the moving velocity of the light beam after the generation of the on-track signal and the moving velocity of the light beam after the generation of the off-track signal are both lower than the target velocity, and generates a deceleration flag when the moving velocity of the light beam after the generation of the on-track signal and the moving velocity of light beam after the generation of the off-track signal are both higher than the target velocity,

7. (Previously Presented) An optical signal drive according to claim 6, wherein the tracking velocity correction circuit applies the signal indicative of the acceleration energy or deceleration energy of substantially a constant level to the tracking servo mechanism during both the acceleration flag and the deceleration flag are logically set up.

8. (Previously Presented) An optical disc drive according to claim 3, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

9. (Previously Presented) An optical disc drive according to claim 4, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time

measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

10. (Previously Presented) An optical disc drive according to claim 7, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

11. (Previously Presented) An optical disc drive according to claim 5, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

12. (Previously Presented) An optical disc drive according to claim 6, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

13. (Previously Presented) A track search control circuit according to claim 1, wherein the track traversing signal generation circuit detects the light beam having traversed the track of the optical disc based on a tracking error signal indicating a relative positional displacement in the radial direction of the optical disc between the track and the light beam and a readout ripple signal.

14. (Previously Presented) New) A track search control circuit according to claim 2, wherein the track traversing signal generation circuit detects the light beam having traversed the track of the optical disc based on the tracking error signal and a readout ripple signal.

15. (Currently Amended) A track search control circuit comprising:

an optical pickup for emitting and moving a light beam in the radial direction of an optical disc to write information signal into the optical disc or read the information signal therefrom;

a signal processing circuit configured to generate a tracking error signal that indicates a relative positional displacement in the radial direction of the optical disc between the track and the light beam emitted from the optical pickup and a ripple signal;

a track traversing signal generation circuit configured to detect, when the light beam emitted from the optical pickup moves in the radial direction of the optical disc to write the information signal into the optical disc or read the information signal therefrom, the light beam having traversed a track of the optical disc based on [a] the tracking error signal indicating a relative positional displacement in the radial direction of the optical disc between the track and the light beam and [a readout] the ripple signal, and generate a normal direction on-track signal in an on-track period when the light beam traverses a zone of the track in a track search direction defined by a system controller and a normal direction off-track signal in an off-track period when the light beam traverses a zone between the tracks;

a first time measurement circuit configured to start time measurement at a time when the on-track signal is generated by the track traversing signal generation circuit;

a second time measurement circuit configured to start time measurement at a time when the off-track signal is generated by the track traversing signal generation circuit;

a velocity error signal generation circuit configured to detect an error between a relative moving velocity of the light beam of the optical disc to the track and a target velocity

based on a measurement outputted by the first time measurement circuit and a measurement outputted by the second time measurement circuit to generate an error signal; and

a correction circuit configured to correct the moving velocity of the light beam in the radial direction based on the error signal generated by the velocity error signal generation circuit.

16. (Previously Presented) A track search control circuit according to claim 15, wherein the on-track signal and the off-track signal are generated approximately at the time of zero-crossing of the tracking error signal.

17. (Canceled).

18. (Canceled).

19. (Canceled).

20. (Currently Amended) An optical disc drive ~~according to claim 19,~~ comprising:

a signal processing circuit configured to generate a tracking error signal that indicates a relative positional displacement in the radial direction of an optical disc between a track and an optical beam from an optical pickup which emits the optical beam on the track of the optical disc, on which information is recorded, and receive the reflected optical from the track or the transmitted optical therethrough while the optical disc is rotating, thereby extracting the information and converting the information to an electric signal, and a ripple signal that indicates amplitude information, from the electric signal output of the optical pickup at a time when the optical beam emitted from the optical pickup moves in the radial direction of the optical disc;

a tracking servo mechanism configured to control the optical beam emitted from the optical pickup in response to the tracking error signal so that the optical beam in the radial direction of the disc is positioned on the track;

a track traversing signal generation circuit configured to detect that the optical beam emitted from the optical pickup has traversed the track based on the tracking error signal and the ripple signal, and generate an on-track signal in an on-track period when the optical beam traverses a zone of the track and an off-track signal in an off-track period when the optical beam traverses a zone between the tracks;

a first time measurement circuit comprising a first counter which is cleared by the on-track signal, counts clock signals having a constant frequency higher than that of the on-track signal, and goes into a hold status when counting a specified number of clock signals, after generating a first flag output indicating that the moving velocity of the optical beam after the generation of the on-track signal is lower than the target velocity;

a second time measurement circuit comprising a second counter which is cleared by the off-track signal, counts the clock signals, and goes into a hold status when counting a specified number of clock signals, after generating a second flag output indicating that the moving velocity of the optical beam after the generation of the off-track signal is lower than the target velocity; and

a velocity error signal generation circuit configured to generate, based on the first flag output and the second flag output, as an error signal, generate an acceleration flag when the moving velocity of the optical beam after the generation of the on-track signal and the moving velocity of the optical beam after the generation of the off-track signal are both lower than the target velocity, and generate a deceleration flag when the moving velocity of the optical beam after the generation of the on-track signal and the moving velocity of the optical beam after the generation of the off-track signal are both higher than the target velocity; and

a tracking velocity correction circuit configured to correct the moving velocity of the optical beam in the radial direction by applying the error signal output of the velocity error signal generation circuit to the tracking servo mechanism.;

wherein the tracking velocity correction circuit starts to apply a signal indicative of an acceleration energy or a deceleration energy corresponding to the error signal to the tracking servo mechanism in a half-track period after when the velocity error signal generation circuit starts the error detection

21. (Previously Presented) An optical disc drive according to claim 20, wherein the on-track signal and the off-track signal are substantially at a constant level.

22. (Currently Amended) An optical disc drive ~~according to claim 19,~~ comprising:

a signal processing circuit configured to generate a tracking error signal that indicates a relative positional displacement in the radial direction of an optical disc between a track and an optical beam from an optical pickup which emits the optical beam on the track of the optical disc, on which information is recorded, and receive the reflected optical from the track or the transmitted optical therethrough while the optical disc is rotating, thereby extracting the information and converting the information to an electric signal, and a ripple signal that indicates amplitude information, from the electric signal output of the optical pickup at a time when the optical beam emitted from the optical pickup moves in the radial direction of the optical disc;

a tracking servo mechanism configured to control the optical beam emitted from the optical pickup in response to the tracking error signal so that the optical beam in the radial direction of the disc is positioned on the track;

a track traversing signal generation circuit configured to detect that the optical beam emitted from the optical pickup has traversed the track based on the tracking error signal and the ripple signal, and generate an on-track signal in an on-track period when the optical beam traverses a zone of the track and an off-track signal in an off-track period when the optical beam traverses a zone between the tracks;

a first time measurement circuit comprising a first counter which is cleared by the on-track signal, counts clock signals having a constant frequency higher than that of the on-track signal, and goes into a hold status when counting a specified number of clock signals, after generating a first flag output indicating that the moving velocity of the optical beam after the generation of the on-track signal is lower than the target velocity;

a second time measurement circuit comprising a second counter which is cleared by the off-track signal, counts the clock signals, and goes into a hold status when counting a specified number of clock signals, after generating a second flag output indicating that the moving velocity of the optical beam after the generation of the off-track signal is lower than the target velocity; and

a velocity error signal generation circuit configured to generate, based on the first flag output and the second flag output, as an error signal, generate an acceleration flag when the moving velocity of the optical beam after the generation of the on-track signal and the moving velocity of the optical beam after the generation of the off-track signal are both lower than the target velocity, and generate a deceleration flag when the moving velocity of the optical beam after the generation of the on-track signal and the moving velocity of the optical beam after the generation of the off-track signal are both higher than the target velocity; and

a tracking velocity correction circuit configured to correct the moving velocity of the optical beam in the radial direction by applying the error signal output of the velocity error signal generation circuit to the tracking servo mechanism,

wherein the track traversing signal generation circuit generates the on-track signal and the off-track signal approximately at the time of zero-crossing of the tracking error signal.

23. (Currently Amended) An optical disc drive ~~according to claim 19,~~ comprising:

a signal processing circuit configured to generate a tracking error signal that indicates a relative positional displacement in the radial direction of an optical disc between a track and

an optical beam from an optical pickup which emits the optical beam on the track of the optical disc, on which information is recorded, and receive the reflected optical from the track or the transmitted optical therethrough while the optical disc is rotating, thereby extracting the information and converting the information to an electric signal, and a ripple signal that indicates amplitude information, from the electric signal output of the optical pickup at a time when the optical beam emitted from the optical pickup moves in the radial direction of the optical disc;

a tracking servo mechanism configured to control the optical beam emitted from the optical pickup in response to the tracking error signal so that the optical beam in the radial direction of the disc is positioned on the track;

a track traversing signal generation circuit configured to detect that the optical beam emitted from the optical pickup has traversed the track based on the tracking error signal and the ripple signal, and generate an on-track signal in an on-track period when the optical beam traverses a zone of the track and an off-track signal in an off-track period when the optical beam traverses a zone between the tracks;

a first time measurement circuit comprising a first counter which is cleared by the on-track signal, counts clock signals having a constant frequency higher than that of the on-track signal, and goes into a hold status when counting a specified number of clock signals, after generating a first flag output indicating that the moving velocity of the optical beam after the generation of the on-track signal is lower than the target velocity;

a second time measurement circuit comprising a second counter which is cleared by the off-track signal, counts the clock signals, and goes into a hold status when counting a specified number of clock signals, after generating a second flag output indicating that the moving velocity of the optical beam after the generation of the off-track signal is lower than the target velocity; and

a velocity error signal generation circuit configured to generate, based on the first flag output and the second flag output, as an error signal, generate an acceleration flag when the moving velocity of the optical beam after the generation of the on-track signal and the moving velocity of the optical beam after the generation of the off-track signal are both lower than the target velocity, and generate a deceleration flag when the moving velocity of the optical beam after the generation of the on-track signal and the moving velocity of the optical beam after the generation of the off-track signal are both higher than the target velocity; and

a tracking velocity correction circuit configured to correct the moving velocity of the optical beam in the radial direction by applying the error signal output of the velocity error signal generation circuit to the tracking servo mechanism;

wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

24. (Previously Presented) An optical disc drive according to claim 20, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

25. (Previously Presented) An optical disc drive according to claim 21, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.

26. (Previously Presented) An optical disc drive according to claim 22, wherein the track traversing signal generation circuit, the first time measurement circuit, the second time measurement circuit, the velocity error signal generation circuit, and the tracking velocity correction circuit are formed on the same semiconductor chip in a form of an integrated circuit.